6000 0804

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Drill Hole File - Hole No. D-1-94
AUTHOR	C. Wineteer; C. Muerhoff; S. Faircloth
DATE OF DOC(S)	1994
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Hecla Mining Co.; Rosebud Project South Zone
COMMODITY If not obvious	gold; silver
NOTES	drill logs; geology; assay; total depth 220' receipt; handwritten notes underground drilling 10p

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

SS: DD 4/30/08
Initials Date
DB:
Initials Date
SCANNED:
Initials Date

Revised: 1/22/08

UNDERGROUND DRILLING D-1-74

6000 0804
4010

6000 0804

Hecla
MINING COMPANY

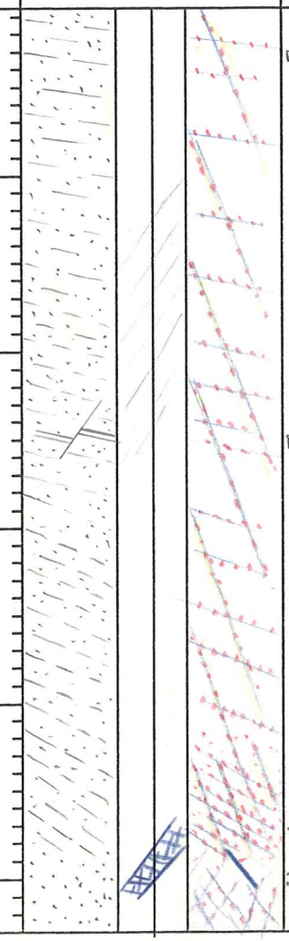
ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	D-1-94	LOCATION	South Zone	REMARKS	
PAGE 1 OF 7		NORTHING	2203351.1		
DATE	7-1-94	EASTING	481277.3		
LOGGED BY	CB. WINETEER	ELEVATION	4759.8		
SCALE	1" = 5'	AZIMUTH	127.5°		
TOTAL DEPTH	220'	INCLINATION	52°		

LITHOLOGY

%REC	RQD	HARDNESS	COLOR	LITHOLOGY	FT
92%	.70 7 total >4"	HD	GRN-GRY	0-24' Fine-grained, well-sorted, thinly-laminated (planar, wavy rhythmically graded) siliceous green and grey, dense (waterlain) tephra w/ fine-grained pale green silicified subrounded lapilli in pale pinkish grey siliceous groundmass.	5
108%	.14 2 total >4"				10
93%	.57 4 total >4"				15
93%	.60 5 >4"				20
108%	.75 8 >4"				25
		SOFT	GRY		
		HD			

GRAPHIC LOG



STRUCTURE	ALTERATION AND MINERALIZATION
planar & wavy-laminated 82'	0-24' Micro hairline stringer coincident w/ laminations comprised of $CaCO_3$ < py ≥ pale green to white clay cross-cut by 20-30' $CaCO_3$ > py ≤ marc > pale green clay < white smec/ill > subhedral f.g. spl. & open-space f.g. Q
frac's @ 35'	
planar & wavy-laminated 76' x-cutting $CaCO_3$ + py @ 35'	
fault bx w/ bounding stx's @ 35 (top) & 40' (base	Minor f.g. cubic diss. py adjacent to vnlts
planar & wavy laminations 55'	
24-41' massive bdd.	25-25.2' c.xln $CaCO_3$ @ 40'

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
0	5	5.0'	0.006	0.05		
5	10	5.0'	0.007	0.11		
10	15	5.0'	0.026	0.05		
15	20	5.0'	0.015	0.93		
20	25	5.0'	0.019	0.33		

HOLE NUMBER D-1-94 PAGE 2 OF 7

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
100%	.57 4 >4"	HD	GRY w/pale grn tint	24-41' Medium-grained, well-sorted, matrix-supported, massive bedded, dense, siliceous grey (waterlain) tephra w/ subangular to subrounded pale green lapilli (slightly clay altered) in a siliceous tan-grey very fine-grained groundmass.			Slicked, surf's w/ py+CaCO3 @ 70° & 5°	24-41 Conjugate set of frac's @ 25-30° & 25-30° w/ CaCO3 ± py ± marc ± smec/ill ± open-space f.g. Q ± spl.
103%	.71 7 >4"				30			10' @ 0.075, 0.16
100%	.65 5 >4"	MOD HD			35			36' ↓ Disseminated f.g. cubic py 37-42' 0.1" smec/ill ± marc. ± py @ 25-30°
86%	.38 4 >4"	HD		41-55' Fine to medium grained, moderate to well-sorted, matrix- and clast-supported, rhythmically graded bedded, thinly laminated siliceous, dense greenish-pinkish grey (waterlain) tephra w/ white subangular to subrounded lapilli in pinkish tan fine-grained siliceous groundmass.	40		planar & wavy laminations 30'	@20° 43' bright slightly yellow massive sheared py ± grn & pink clay 41-55' CaCO3 < py co-incident w/ Laminations x-cutting CaCO3 > py > marc + smec/ill + pale to dark grn chl. clay + red to blackjack spl. @ 20'-30'
91%	.47 5 >4"				45		p & w-laminations @ 10-15'	
88%	.57 6 >4"	MOD HD			50		p & w-laminations @ 0'	
92%	.40 4 >4"		GRY w/ pink tint	55-67' Very-fine grained, well-sorted, generally massive bedded siliceous pale grey, moderately dense-compact (waterlain or airfall) tephra, no apparent lapilli or crystal fragments	55 60		p & w-laminations contorted - soft-sediment deformation 55-67' Moderate intense frac'd @ 10, 30, 45, 70° w/ wavy smec/ill ± pale to dk grass green chl. clay ± py ± marc, + spl. ± CaCO3 - slicked	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
25	30	5.0'	0.068	0.19	(grav) 0.074	
30	35	5.0'	0.080	0.13	(grav) 0.075	
35	40	5.0'	0.007	0.92		
40	45	5.0'	0.019	0.06		
45	50	5.0'	0.005	0.05		
50	55	5.0'	0.002	0.03		
55	60	5.0'	0.007	0.07		

HOLE NUMBER D-1-94 PAGE 3 OF 7

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
93%	.53 6 >4" 65	MOD HD	GRY w/ pink tint					
96%	.53 5 >4" 70	MOD HD	PINKISH-TAN w/ LOC. Pale grn mottling	67-68.5 Fault brecciated tuff breccia as below. 68.5-105' Auto or homogeneous Coarse-grained, poorly-sorted matrix-supported, carbonate and silica flooded tuff breccia, w/ fine-grained (massive bedded ↓ to 83' and laminated ↓ 105') well-sorted (waterlain) tephra clasts in a matrix of finer-grained fragments; fragments are rounded - subrounded & locally subangular w/ clay altered cores & pink silica (both sulf-rich & sulf-depleted) rims. Disseminated py locally concentrated w/in cores. Groundmass more siliceous than clasts	65		rhythmically graded bedding @ 50' 67' sharp slick-surf w/ ridge-groove stx @ 21' R & G's @ 40'	67-68.5 discont. irreg. thin $CaCO_3$ ± py & smec fill unlts. 68.5-104' Mod to weak intensity $CaCO_3$ ± py + marc ± spl ± smec fill @ 10-20'; 70-80' & 50-60'; pink mod. to weak intensity silica of g.m. & rims & minor smec fill on 10-20' clasts
90%	.63 4 >4" 75	MOD MOD HD HD			70		73-76.5 Fault brecciated w/ $CaCO_3$ vn 73-74' @ 10'	73' Amber to dk red anhedral spl + py ± minor sulfosalt coatings 73-74' @ 10' C. xln barren $CaCO_3$
98%	.86 7 >4" 80				75			diss. v.f.g. cubic py <1%
90%	.83 5 >4" 85				80			
82%	.54 4 >4" 90				85			
100%	.77 9 >4" 95				90			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
60	65	5.0'	0.005	0.03		
65	70	5.0'	0.012	0.11		
70	75	5.0'	0.005	0.03		
75	80	5.0'	0.006	0.03		
80	85	5.0'	0.013	0.06		
85	90	5.0'	0.048	0.07	0.048	
90	95	5.0'	0.006	0.03		

HOLE NUMBER D-1-94 PAGE 4 OF 7

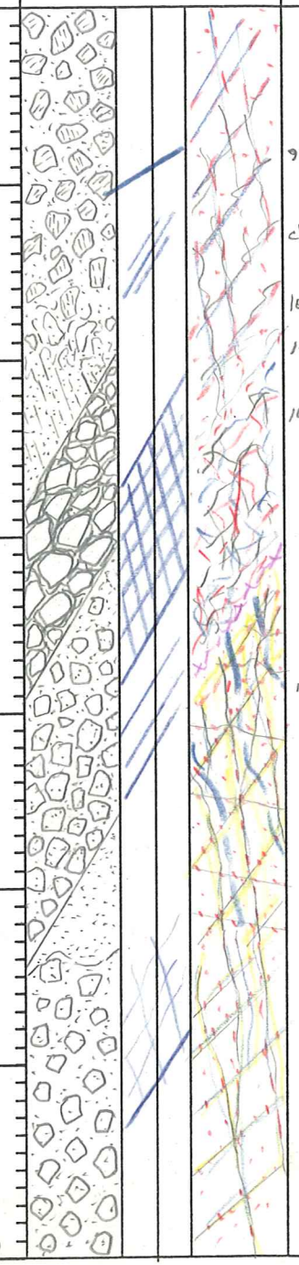
%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
100%	1.0 5>4" 100	HD; PINKISH TAN w/ LOC pale gr mottling				
94%	.75 8>4" 105	MOD-MOD HD	100		99.5' dark grey siliceous slick 0.15" @ 60° clayey gouge @ 30° 104-105' gradational - interbedded contact 105-107' laminations @ 20°	99.5' ↓ marked increase in smec/ill+arg. alt of clasts & incr. in clay content of microvlts.
90%	.35 3>4" 110	MOD SOFT	105		107-112.5' fault breccia w/in bounding stx's @ 30° angular frag's, discont. sulf/clay str. w/in clay gouge	107-112.5' fragmented $CaCO_3$ ± sulf + smec/ill
88%	.50 4>4" 115		110		Strong arg. alt 110-120' 115 ↑ incr. SiO_2 on 30°'s 114-116' frac's w/ clay gouge @ 30°	112.5' C. xln barite + smec/ill on 30° stx 112.5-122' smec/ill ± C. xln barite ± marc ± py ± $CaCO_3$ on 30-40°, 10°, 80° fracs minor <1% v. f. g. diss. cubic py
90%	.62 6>4" 120	MOD	115			
100%	.81 7>4" 125	MOD HD; greyish tan matrix w/ pink clasts	120			122.5-127' Organic carbon + $CaCO_3$ + smec/ill + sericite + py ± cpy on 0.05" vnlts @ 45°; 0-10' ± Au-py
88%	.56 4>4" 130		125			127-131.5' Minor s.a.a. ± minor s.s.

105-107' Fine-grained, well-sorted, planar and cross-laminated (waterlain) tephra w/ local contorted bedding (at top); rhythmically graded bedding

107-112.5' Fault brecciated, argillic altered, clast-supported tuff breccia as below.

112.5-120.2' Coarse-grained, moderate to poorly-sorted, matrix-supported duto or heterolithic tuff breccia w/ angular to subrounded clasts ranging from ash to 1.5 cm composed of fine-grained massive & laminated (waterlain) tephra; clasts are generally more clay altered or more silicified than accompanying groundmass.

120.2-122 Sandy-textured, fine to medium grained, moderate to well-sorted, massive bedded lapilli (waterlain or airfall) tephra



ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
95	100	5.0'	0.002	0.04		
100	105	5.0'	0.004	0.04		
105	110	5.0'	0.007	0.06		
110	115	5.0'	0.017	0.13		
115	120	5.0'	0.024	0.11		
120	122.5	2.5'	0.009	0.12		
122.5	127	4.5'	0.013	0.23		
127	131.5	4.5'	0.021	1.20		

HOLE NUMBER D-1-94 PAGE 5 OF 7

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
110%	1.0 2 > 4" 131	MOD HD	S.A.A.	122-131.5' Poorly-sorted, matrix-supported, coarse-(fragment) grained tuff breccia w/ fine to medium grained tephra & lapilli tuff fragments in a clay-rich groundmass w/ hairline silica microvnlts stkw. Clasts are angular to subrounded w/ SiO_2 micro-reaction rims & thin bleached reaction alteration halo's.				
115%	.66 6 > 4" 135	MOD	grey matrix w/ grey & pink clasts		135		131.5-137 Frac'd rubble w/ principal slicks @30' organic carbon rich in matrix-slicked	131.5-137 discont. irreg. smec/ill + py ± cpy + Q ± organic-clay + $CaCO_3$ + 5% diss cubic py
84%	.65 11 > 4" 144	MOD HD - HD	bleached light grey matrix w/ white, grey, pink clasts w/ marked reaction rims	131.5-137' Rubbly-fractured same as above 137-156' Bleached hydrothermally silicified poorly-sorted, coarse-grained, matrix-supported, apparent heterolithic (poss. diff. in alteration of clasts) tuff breccia. Clasts partially to totally replaced by silica f.g. groundmass shot-thru w/ clear SiO_2 micro hairline stkwk	140		*	137-141 0.01-0.03" micro-stkwk SiO_2 + $CaCO_3$ + < smec/ill + f. granular py w/ qz, solved s.s.? black streak @25' & 60' → platelets. ss. py
92%	.73 12 > 4" 153.5			—153.5-156' Dark grey to black organic-rich clay w/ or w/out smec/ill ± Q ± py ± cpy ± ss. ± spl. ± carbon + V.G/V.E. aggregates	145 150		Slicks @ 60' ± Q + $CaCO_3$ + sulf.	F. to coarse-grd. V.G./V.E 141-142' 40' Q + smec/ill + cpy + Au-py + V.G. + V.E. + Ruby Ag + sulfosalt + organic carbon in 0.05" vnlt. ± Native Ag ± $CaCO_3$ < Tall ore min. as intergrowths w/ smec/ill + sericite interior to open-sp Q 142 → 146' open-space-Q → smec/ill + sericite → cpy + Au-py + V.E. (f. to loc. med grd.) + spl + sulfosalts @ 40° ± 5' in 0.02-0.05" microvnlts, ± $CaCO_3$ diss. cubic py 1-2% 146-150' Q + smec/ill + cpy + tarnish marc. + py @ 0-20' & 45-60' ± sulfosalts + < V.E.
94%	.60 12 > 4" 162.5		light to medium pinkish grey matrix w/ light grey to dk pink clasts	156-172.5' Same as above w/ decrease in bleaching of groundmass and clasts, clasts are locally strongly clay altered / or strongly silicified.	155 160		clay-rich frac-fillings	150-153.5 microhairline str. @ 65-75° & 0.15" $CaCO_3$ + Q + smec/ill + py + marc. + organic carb. @ 5' 153.5-156' see descr. to right 156-172.5 increasing smect/ill on high ∠ stx's w/ incr. in marc.
97%	.39 7 > 4"				165		163' organic carbon str. stylized @ 70' patches of organic carbon clay & 170'	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
131.5	137	5.5'	0.111	4.06	(grav) 0.107	29.5' @ 0.304, 3.95
137	141	4.0'	0.026	0.11		
V.G. + V.E. 141	142	1.0'	1.788	43.40	(grav) 2.361	
V.E./V.G. 142	146	4.0'	0.783	4.82	(grav) 0.870	
146	150	4.0'	0.074	0.35	(grav) 0.081	
150	153.5	3.5'	0.063	0.91	(grav) 0.066	
V.E. 153.5	156	2.5'	0.132	2.66	(grav) 0.144	
156	161	5.0'	0.014	1.61		
161	166	5.0'	0.016	0.53		

HOLE NUMBER D-1-94 PAGE 6 OF 7

%REC	RQD	LITHOLOGY	FT	STRUCTURE	ALTERATION AND MINERALIZATION
		MOD HD - HD; SOFT MOD; MOD HD; S.A.A.			165-166 1ST OCCURRENCE OF OXIDIZED SMEC/ILL CLAY (DUCK'S BUTTER)
	170		170	166' Slicks @25°, 5; 65° in clayey gouge w/dk grey to black organic material - clay	166-173' 0.05" marc.-rich stkwk @ 60°; 8°; 30° diss py 2-3%
82% NOTE: BLOCK LOCATED WRONG, MOVED TO START OF RUN 1' DOWN HOLE	.69 14>4"	172.5 - 218' Matrix-supported, poorly-sorted, coarse-grained tuff breccia as above w/ decreasing silicification of groundmass & clasts & increased clay alteration of clasts.			172' 0.5" OXID; SMEC/ILL vnlts @ 30° w/ split @ 80°
		MOD HD; light to dk pink matrix w/ cream to pale yellow-grn clasts	175		173-187' decr. sulf stringers princ. 30° drop out
	180				
110%	.74 13>4"		180		
			185		187-197.5' 0-5' 0.01-0.03" smec/ill + oxid smec/ill + marc ± py ± open-space Q + @ 197-197.5 c. xln. tan Fluorite
	190		190		
96%	.88 8>4"	MOD-MOD HD			190-195' patches? stringers of med. to dk grn chlorite clay + bright py
			195	FI	197.5-218' Minor vnlts predom @ 40° w/ Q + smec/ill ± oxid ± bar ± marc ± py < @ 15-20° decr. diss py
	200		200		

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
166	170	4.0'	0.036	1.09		
170	175	5.0'	0.013	0.77		
175	180	5.0'	0.008	0.10		
180	185	5.0'	0.002	0.05		
185	190	5.0'	0.008	0.27		
190	195	5.0'	0.009	0.09		
195	200	5.0'	0.005	0.05		

HOLE NUMBER D-1-94 PAGE 7 OF 7

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
97%	.74 12 >4"	MOD – MOD HD; grn & pink matrix & clasts; pink matrix w/ cream & pale grn clasts				
	210		205 210		Bar	
88%	.56 9 >4"	MOD; pale green; 218-220' Fine-grained, well-sorted massive-bedded, fractured (waterlain) tephra	215		Bar; 218' Apparent sharp contact @ 30°	Discont. frac – stkwk w/ thin py+mare+smec/ill
	220	END OF HOLE @ 220'	220			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
200	205	5.0'	0.004	0.05		
205	210	5.0'	0.006	0.07		
210	215	5.0'	0.006	0.09		
215	220	5.0'	0.003	0.18		

ANALYSIS REPORT

American Assay Laboratories Inc.

P.O. BOX 71060
RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

:

:

Posted

CLIENT REFERENCE No: D-1-94

LABORATORY JOB No. : SP029875

SAMPLE TYPE :

RECEIVED : 7/07/94

REPORTED : 15/07/94

No. SAMPLES : 47

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA60	15%	OPT	0.001
Au(RZ)	FA60	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-1-94
JOB NUMBER : SP029875
REPORTED : 15/07/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-1-94 000-005	0.006			0.05
D-1-94 005-010	0.007			0.11
D-1-94 010-015	0.026			0.65
D-1-94 015-020	0.015			0.93
D-1-94 020-025	0.019			0.33
D-1-94 025-030	0.068		0.074	0.19
D-1-94 030-035	0.080		0.075	0.13
D-1-94 035-040	0.007			0.92
D-1-94 040-045	0.019			0.06
D-1-94 045-050	0.005			0.05
D-1-94 050-055	0.002			0.03
D-1-94 055-060	0.007			0.07
D-1-94 060-065	0.005			0.03
D-1-94 065-070	0.012			0.11
D-1-94 070-075	0.005			0.03
D-1-94 075-080	0.006			0.03
D-1-94 080-085	0.013			0.06
D-1-94 085-090	0.048	0.048		0.07
D-1-94 090-095	0.006			0.03
D-1-94 095-100	0.002			0.04
D-1-94 100-105	0.004			0.04
D-1-94 105-110	0.007			0.06
D-1-94 110-115	0.017			0.13
D-1-94 115-120	0.024			0.11
D-1-94 120-122.5	0.009			0.12

Posted

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-1-94
JOB NUMBER : SP029875
REPORTED : 15/07/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-1-94 122.5-127	0.013			0.23
D-1-94 127-131.5	0.021			1.20
D-1-94 131.5-137	0.111		0.107	4.06
D-1-94 137-141	0.026			0.11
D-1-94 141-142	1.788		2.361	43.40
D-1-94 142-146	0.783		0.870	4.82
D-1-94 146-150	0.074		0.081	0.35
D-1-94 150-153.5	0.063		0.066	0.91
D-1-94 153.5-156	0.132		0.144	2.66
D-1-94 156-161	0.014			1.61
D-1-94 161-166	0.016			0.53
D-1-94 166-170	0.036			1.09
D-1-94 170-175	0.013			0.77
D-1-94 175-180	0.008			0.10
D-1-94 180-185	0.002			0.05
D-1-94 185-190	0.008			0.27
D-1-94 190-195	0.009			0.09
D-1-94 195-200	0.005			0.05
D-1-94 200-205	0.004			0.05
D-1-94 205-210	0.006			0.07
D-1-94 210-215	0.006			0.09
D-1-94 215-220	0.003			0.18

Passed